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DEPARTMENT OF COMMERCE AND LABOR
LIGHT-HOUSE ESTABLISHMENT

REGULATIONS

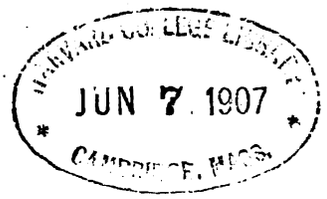
FOR

LIGHTING BRIDGES OVER NAVIGABLE RIVERS

1907

WASHINGTON
GOVERNMENT PRINTING OFFICE
1907

Nov 1753.27



REGULATIONS FOR LIGHTING BRIDGES OVER NAVIGABLE RIVERS.

DEPARTMENT OF COMMERCE AND LABOR,
LIGHT-HOUSE BOARD,
Washington, D. C., March 1, 1907.

The regulations published herewith were adopted by the United States Light-House Board at its session of April 2, 1883, and amended at its sessions of June 4, 1904, June 4, 1906, and July 12, 1906, in accordance with the following act of Congress:

ACT OF CONGRESS RELATING TO LIGHTING BRIDGES OVER NAVIGABLE RIVERS.

"*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* * * * That all parties owning, occupying, or operating bridges over any navigable river shall maintain at their own expense, from sunset to sunrise, throughout the year, such lights on their bridges as may be required by the Light-House Board for the security of navigation; and, in addition thereto, all persons owning, occupying, or operating any bridge over any navigable river shall, in any event, maintain all lights on their bridge that may be necessary for the security of navigation.

* * * * * * * * * *

"Approved August 7, 1882."

By order of the Light-House Board:

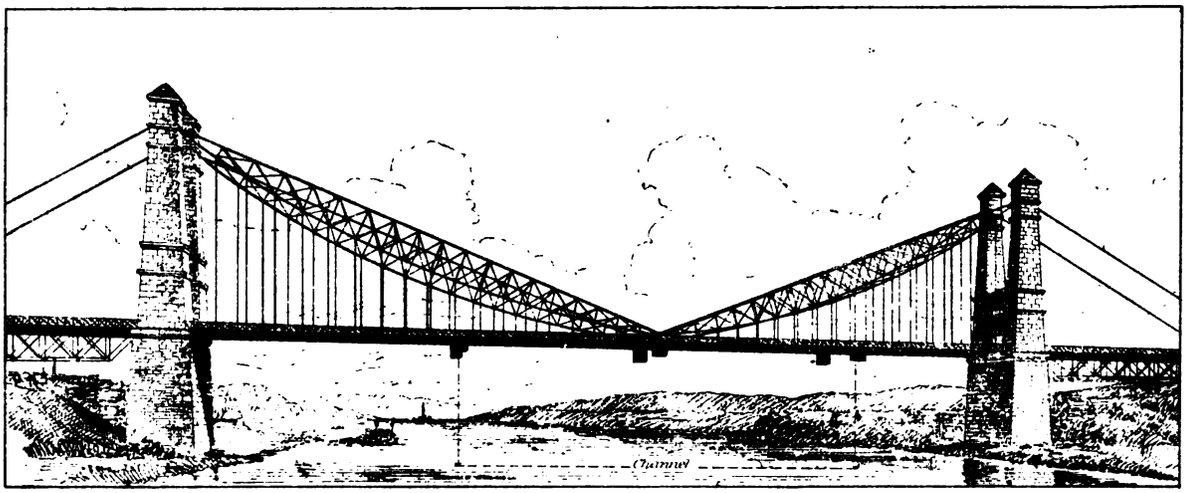
GEORGE C. REITER,
Rear-Admiral, U. S. Navy, Chairman.

CASE I.—SINGLE-SPAN SUSPENSION-BRIDGES.

(See Diagram 1.)

Every suspension-bridge of single span shall have the middle of the channel-passage marked by two *green* lights, one showing upstream and the other showing downstream, and each margin of the channel marked by two *red* lights.

DIAGRAM 1.



SINGLE-SPAN SUSPENSION-BRIDGE.

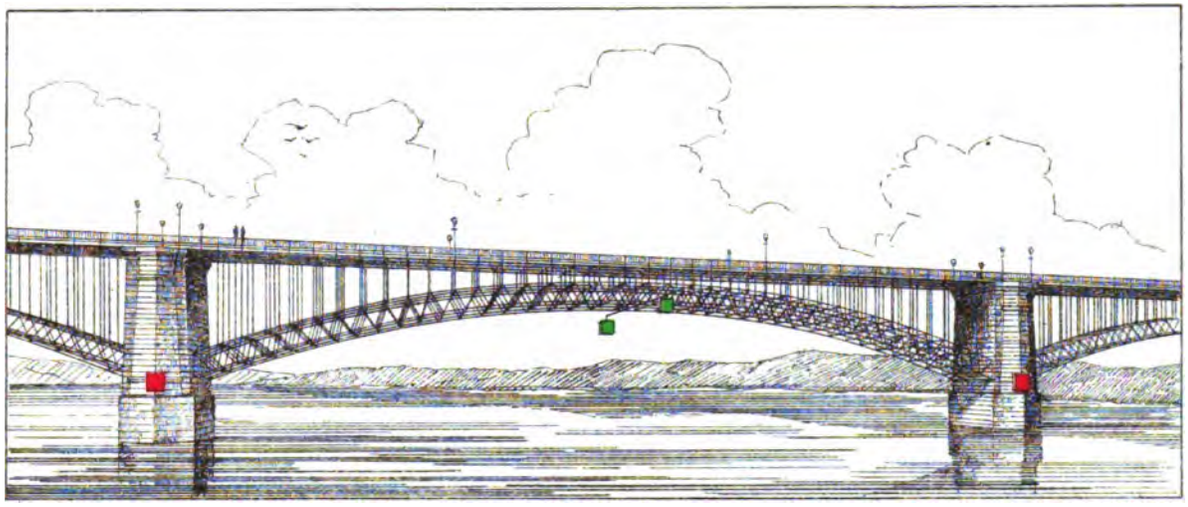
CASE II.—ARCHED BRIDGES AND HIGH TRUSS-BRIDGES WITHOUT DRAW.

(See Diagram 2.)

Every arched or high truss-bridge without draws shall have the channel piers marked with *red* lights, one at each end of the pier, and the middle of the channel span shall be marked with two *green* lights just below the intrados of the arch or bottom chord of the truss, and placed on the ends of outrigger or horizontal poles, 15 feet long, fastened to the bridge.

Where bridges have two or more channel spans, each of them shall be lighted in the above manner.

DIAGRAM 2.



HIGH TRUSS BRIDGE WITHOUT DRAW.

CASE III.—LOW BRIDGES WITH SWING DRAWS.

(See Diagram 3.)

Every low bridge with a double draw shall have a *red* light on each end of the draw piers. Each protection pier (whether placed in front of a pivot or draw pier) shall have a *red* light at each free end, placed as low as practicable. Each pivot pier shall have one *red* light on each side where the pier is crossed by the axis of the bridge, and placed below the floor level of the same.

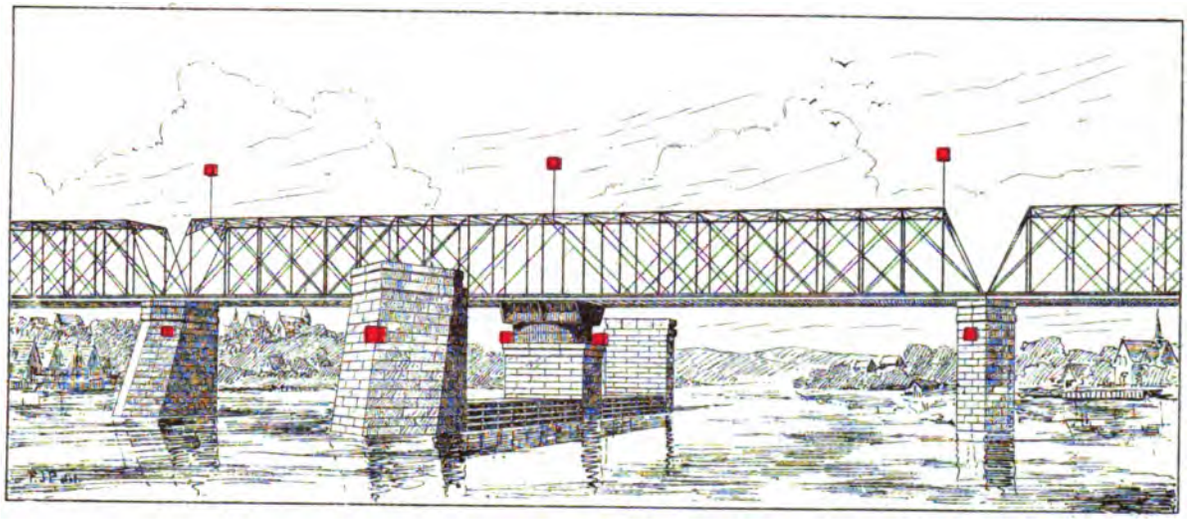
In order to make it distinct whether the draw is open or closed, there shall be placed three square lanterns on the top of the draw-span, all of them raised 15 feet above the top of the draw. These lanterns are to show *green* along the axis of the draw, and *red* at right angles to the axis. The result will be that when the draw is shut there will be shown, up and down stream, three high *red* lights above the permanent low lights; when open, *green* lights will be seen in line, up and down the stream, with the low permanent *red* lights showing the width of the openings.

All of these lights shall be permanent. The diagram shows the bridge with the draw open and with the draw shut.

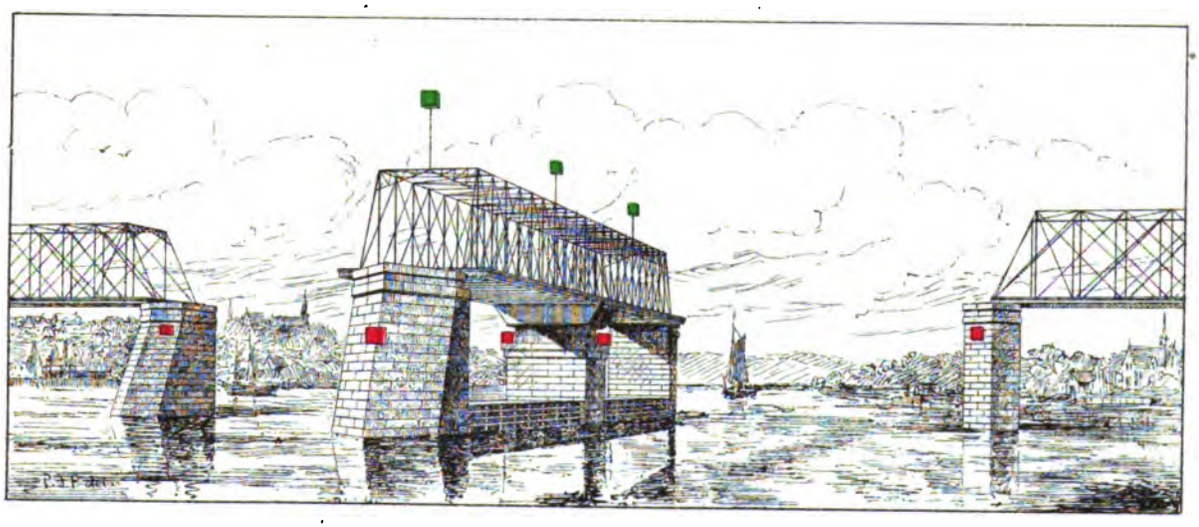
CASE IV.—HIGH BRIDGES WITH SWING DRAWS.

High bridges with draws shall be lighted on their main-channel span during ordinary low water like high bridges without draws. (See Diagram 2.) When the stage of the river exceeds the figure determined for each bridge by the officers of the light-house district, the draw shall be lighted in the manner prescribed for low draw bridges (see Diagram 3), as far as is applicable to their manner of construction, subject to approval of the district officers.

DIAGRAM 8.



LOW BRIDGE WITH SWING-DRAW.
SHUT.



LOW BRIDGE WITH SWING-DRAW.
OPEN.

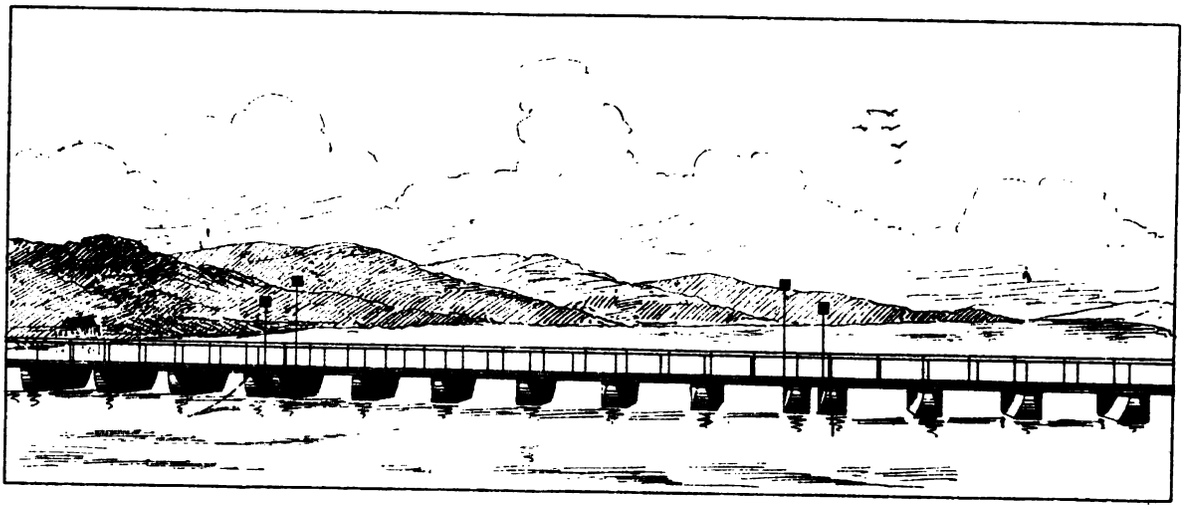
CASE V.—PONTON BRIDGES.

(See Diagram 4.)

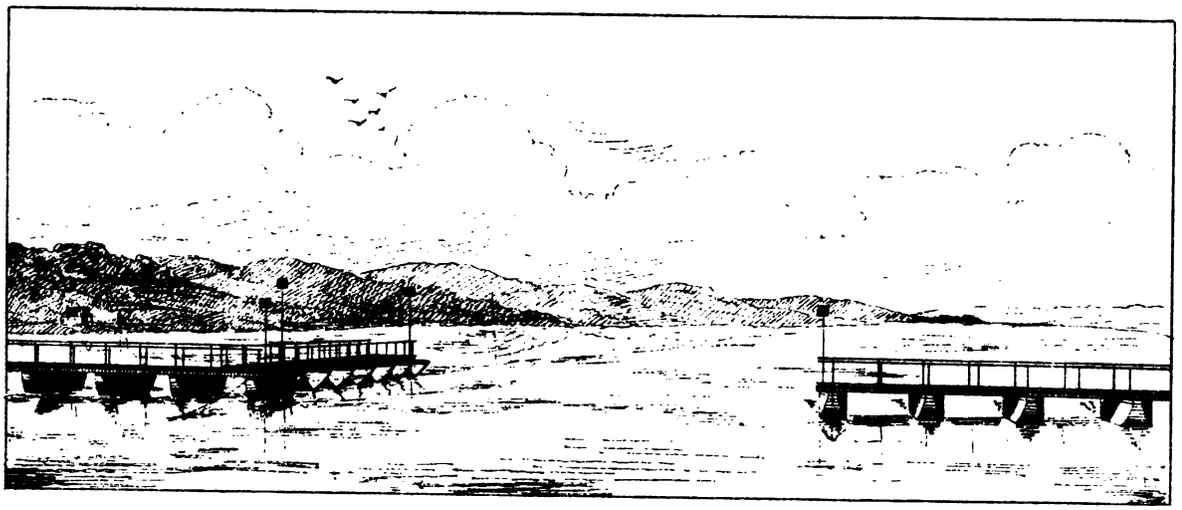
Ponton bridges shall have a *red* light at each end of the draw opening, placed at the upper corners of the fixed portion of the bridge, and at an elevation of 7 feet above the roadway. The draw will be provided with a *red* and *green* light at each end of the upstream side, at an elevation of 10 feet above the roadway, showing *green* along the axis of the draw, and *red* at right angles to the axis.

The diagram shows the bridge with the draw open and with the draw shut.

DIAGRAM 4.



PONTON-BRIDGE
SHUT.



PONTON-BRIDGE.
OPEN.

CASE VI.—ROLLING LIFT BRIDGES—DOUBLE LIFT.

(See Diagram 5.)

Every rolling lift bridge with a double lift shall have a *red* light on each end of the roller piers, placed as low as practicable.

In order to make it clear whether the leaves of the bridge are closed or open, there shall be placed on each leaf near the point where they touch, and on the upstream and downstream sides, a square lantern suspended as shown and free to swing behind a frame containing a circular panel of *red* and *green* colored glass, the frame to be attached to the end of each leaf. The result will be that when the bridge is closed there will be shown on the upstream and downstream sides two *red* lights close together in the center of the bridge and above the permanent low *red* lights; when completely open two *green* lights will be seen at an elevation on each side of the opening and above the low *red* lights, the latter showing the width of the opening.

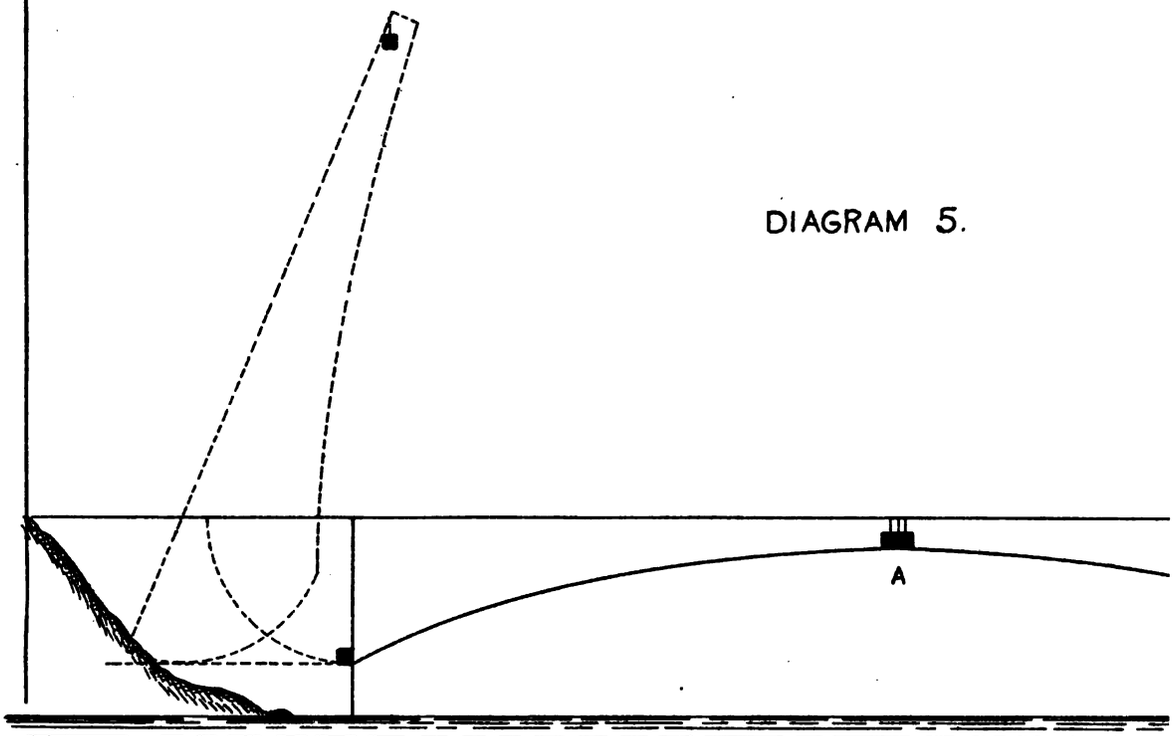
All of these lights shall be permanent. The diagram shows the bridge with the leaves closed and the leaves open.

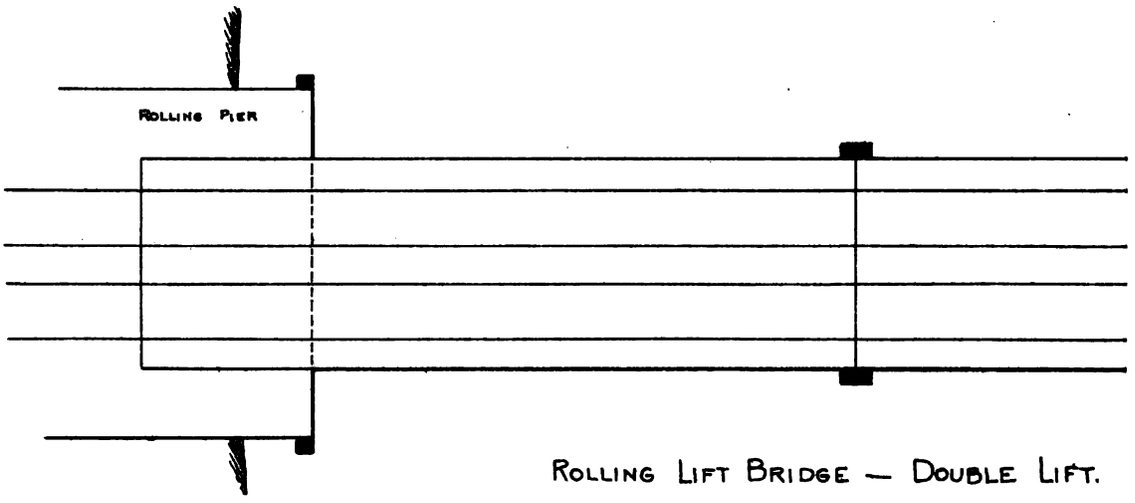
CASE VII.—CABLE LIFT BRIDGES—DOUBLE LIFT.

(See Diagram 5.)

Every cable lift bridge with double lift, in which the leaves of the same are opened by cables, shall be lighted in the manner specified above for rolling lift bridges with double lift.

DIAGRAM 5.





ROLLING LIFT BRIDGE — DOUBLE LIFT.

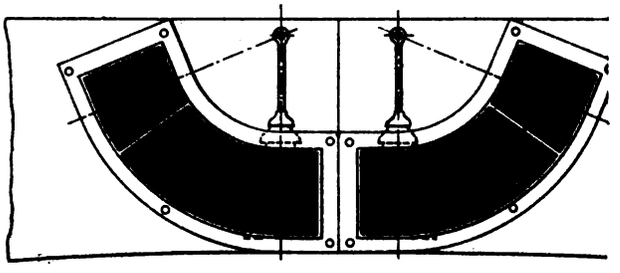


DIAGRAM SHOWING ARRAN

SHOWING RED LIGHTS –

CASE VIII.—ROLLING LIFT BRIDGES—SINGLE LIFT.

(See Diagram 6.)

Every rolling lift bridge with a single lift shall have a *red* light on each end of the rolling pier and lift pier, placed as low as practicable.

In order to make it clear whether the bridge is closed or open, there shall be placed on the leaf near the point where it rests on the lift pier and on the upstream and downstream sides, a square lantern suspended as shown and free to swing behind a frame containing a circular panel of *red* and *green* colored glass, the frame to be attached to the end of the leaf.

The result will be that when the bridge is closed there will be shown on the upstream and downstream sides one *red* light over the lift pier and above the permanent low *red* lights; when completely open one *green* light will be seen at an elevation on one side of the opening and above the low *red* lights, the latter showing the width of the opening.

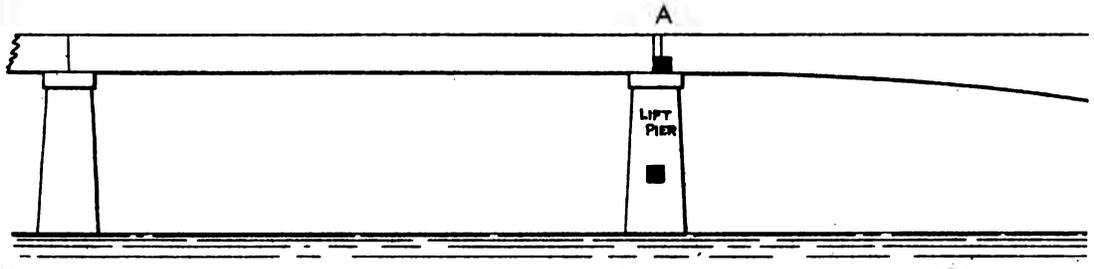
All these lights shall be permanent. The diagram shows the bridge with the leaf closed and the leaf open.

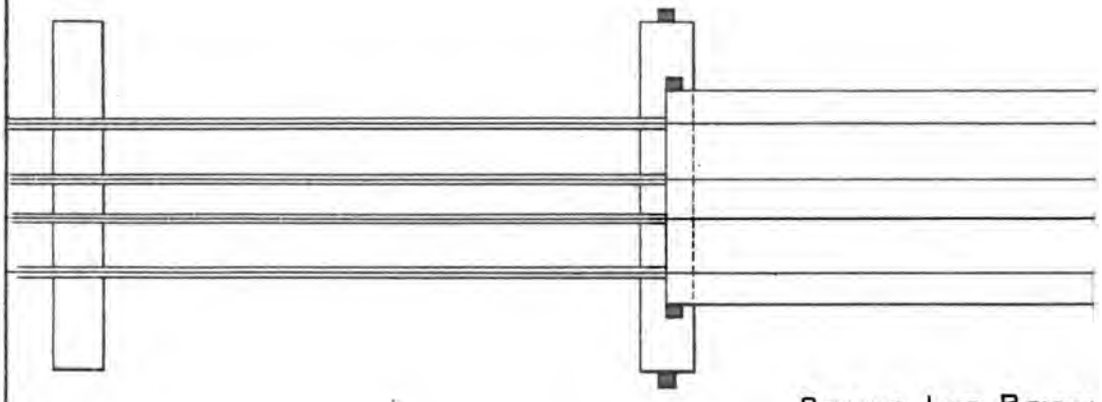
CASE IX.—CABLE LIFT BRIDGES—SINGLE LIFT.

(See Diagram 6.)

Every cable lift bridge, with a single lift in which the leaf is opened by cables, shall be lighted in the manner specified above for rolling lift bridges with single lift.

DIAGRAM 6.





ROLLING LIFT BRIDGE

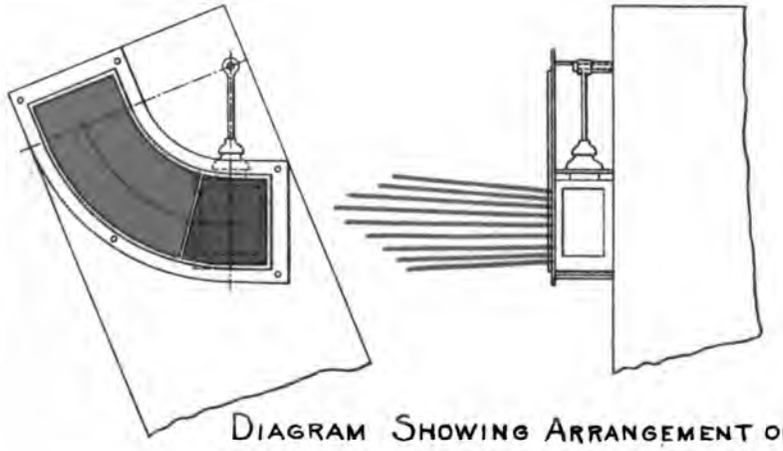


DIAGRAM SHOWING ARRANGEMENT OF LANTERN EXHIBITING GREEN LIGHT ENLARGED VIEW AT B.

CASE X.—VERTICAL LIFT BRIDGES.

(See Diagram 7.)

Every vertical lift bridge shall have a *red* light on each end of the lift piers, placed as low as practicable.

In order to make it clear whether the bridge is closed or open, there shall be attached to the middle of the lift span and below the level of the girders, and on the upstream and downstream sides of the bridge, a square lantern supported as shown, and provided in front with a movable frame containing a panel of *red* and *green* colored glass, the frame to be operated in the manner indicated. The result will be that when the bridge is closed there will be shown, upstream and downstream, one *red* light in the middle of the bridge and above the permanent low lights; when completely open, one *green* light will be seen in the middle and as high as the lift of the bridge will permit, with the low permanent *red* lights showing the width of the opening.

All these lights will be permanent. The diagram shows the bridge with the lift span closed and the lift span open.

SPECIAL CASES.

The manner of lighting bridge structures not covered by the foregoing rules shall be referred to the Light-House Board through the proper district officers.

STOPS FOR DRAWBRIDGES.

It having come to the knowledge of the Board that in some cases, owing to the wind or to the momentum of their weight, drawbridges have swung through more than their proper angle, thus obstructing the opening and endangering the safety of navigation, the attention of the owners or operators of drawbridges is hereby called to the importance of providing stops to prevent draws from rotating beyond the proper point.

USE OF OIL LAMPS.

Adopted by United States Light-House Board July 12, 1906.

The use of oil lamps shall be discontinued on bridges over navigable streams where electric lights are used, and arc lights in globes, or incandescent lights in Fresnel lanterns 8 inches in diameter, to show red and green lights of the same intensity as the white lights marking the roadways, shall be substituted for the oil lamps and shall be located in the same places now occupied by them.

REQUIREMENTS FOR BRIDGE LIGHTS.

Adopted by United States Light-House Board at its session of June 4, 1906.

1. All bridge lights, both red and green, shall be visible on a dark night with a clear atmosphere, not less than one nautical mile, or about 2,000 yards.

2. All bridge lights shall be constructed with a pressed Fresnel lens 8 inches in diameter, using a lamp with a $\frac{5}{8}$-inch flat wick.

3. All lights on top of the draw-span of drawbridges shall be constructed with a white pressed Fresnel lens 8 inches in diameter, surrounded by a square framework in which shall be set discs of red and green glass of not less than $8\frac{3}{8}$ inches in diameter, or panels not less than $8\frac{3}{8}$ inches square, the red discs or panels to be set in two opposite sides and the green discs or panels to be set in the intermediate sides. The light from each disc or panel is to cover not less than 60° of the horizon.

4. For pier lights on all bridges, the light shall be shown from a red, 180° (half-round) pressed Fresnel lens 8 inches in diameter. Arc of illumination to be 180°, or one-half of the horizon.

5. For lights on sheer booms, isolated piers and obstructions, the light shall be shown from a red, 360° pressed Fresnel lens 8 inches in diameter. Arc of illumination to be 360°.

6. For mid-channel (mid-span) lights, the light shall be shown from a green, 360° pressed Fresnel lens 8 inches in diameter. Arc of illumination to be 360°. (In this case the two green lights appearing below the lowest chord of the bridge structure form a range for the middle of the channel.)

7. Lights on all lift bridges shall be constructed after the same manner as those for all other bridges, viz, with a white pressed Fresnel lens 8 inches in diameter, using a lamp with a $\frac{5}{8}$-inch flat wick. Red and green panels are to be fitted in such manner as each case may require.